

We claim:

1. A fastening structure assembled on an end portion of a hose with corrugated metal tube for securely fastening an axial end portion of a hose body, a rigid insert pipe and a socket fitting in unitary relation, comprising:

5 a hose body constructed in multi-layers having a corrugated metal tube as an inner layer and an outer layer including an elastic layer circumscribing a radial outer side thereof,

a rigid insert pipe inserted in an axial end portion of the hose body, and

10 a socket fitting fitted on an outer surface of the hose body at an axial end portion thereof, and compressed or swaged radially inwardly to be secured to an axial end portion of the hose body in which the rigid insert pipe is inserted, the socket fitting having an inwardly directed collar-like base portion,

15 an axial leading portion of the corrugated metal tube being configured as an extending portion extending and exposed out of the outer layer of the hose body, extending at least to a position of a tip end of the inwardly directed collar-like base portion.

20 2. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 1 wherein the extending portion of the corrugated metal tube is formed in non-corrugated, and generally axially straight-walled shape, and extends axially outwardly beyond the inwardly directed collar-like base portion of the socket fitting.

25 3. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 1 wherein the hose body, the rigid insert pipe and the socket fitting are securely fastened in unitary relation so that the extending portion of the corrugated metal tube is clamped in between an inner end surface of the inwardly directed collar-like base portion of the  
30 socket fitting and an outer surface of the rigid insert pipe by securely compressing or swaging the socket fitting to the axial end portion of the hose body and a tight seal is provided thereby between the corrugated metal tube

and the rigid insert pipe.

4. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 3, further comprising; a radial groove formed on either one of an outer surface of the rigid insert pipe or an  
5 inner end surface of the inwardly directed collar-like base portion of the socket fitting, and

a fit-in portion is formed on the other to fit in the radial groove,

the extending portion of the corrugated metal tube being clamped in between the fit-in portion and the radial groove.

10 5. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 4, wherein the fit-in portion is formed by plastic deformation along the radial groove when securely compressing or swaging the socket fitting to the axial end portion of the hose body, and bites in the radial groove in engagement relation via the extending  
15 portion which is clamped in between the fit-in portion and the radial groove, at a bottom surface and axial front and rear side surfaces of the radial groove.

6. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 5 wherein the radial groove is formed on an outer surface of the rigid insert pipe, the fit-in portion is formed  
20 by plastic deformation on the radially inner end portion of the inwardly directed collar-like base portion of the socket fitting when securely compressing or swaging the socket fitting to the axial end portion of the hose body, and a wall thickness of the radially inner end portion of the base portion of the socket fitting is, before securely compressing or swaging the socket  
25 fitting, designed at least larger than a value given by subtracting double of a wall thickness of the extending portion from a width of the radial groove.

7. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 3, further comprising: a small projection formed raised radially on either one of an outer surface of the rigid  
30 insert pipe or an inner end surface of the base portion of the socket fitting,

a small recess formed on the other by plastic deformation under biting of the small projection when securely compressing or swaging the socket

fitting to the axial end portion of the hose body.

the extending portion being clamped by the small projection and the small recess.

- 5 8. A fastening structure assembled on an end portion of a hose with corrugated metal tube for securely fastening an axial end portion of a hose body to a connecting part, comprising:

10 a hose body constructed in multi-layers having a corrugated metal tube as an inner layer and an outer layer circumscribing a radial outer side thereof, an axial end side of the corrugated metal tube being configured as an extending portion extending and exposed out of the outer layer of the hose body,

a connecting part inserted in an axial end portion of the hose body,

15 a socket fitting having a sleeve and a radially inwardly directed collar-like portion formed on a base portion thereof, and fitted onto an axial end portion of the hose body and securely compressed or swaged radially inwardly to an axial end portion of the hose body so as to fixedly secure the extending portion of the corrugated metal tube to the connecting part and to thereby fasten an axial end portion of the hose body to the connecting part, and

20 a filler layer interposed in an inner surface side of the sleeve of the socket fitting, and deformed and moved under fastening force exerted by the socket fitting when securely compressing or swaging the socket fitting, the filler layer being urged in a gap defined on a tip end side of the outer layer, filling in the gap by compressing or swaging the socket fitting, and bearing from radially outside the extending portion of the corrugated metal tube on  
25 which an internal pressure is applied.

9. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 8 wherein the gap is defined between a tip end of the outer layer and the collar-like portion of the socket fitting.

30 10. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 8 wherein the outer layer has a reinforced layer sectionally midway thereof, and an inner elastic layer and an

outer elastic layer disposed inside and outside of the reinforced layer respectively.

11. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 10 wherein the filler layer is  
5 defined by a part of the elastic outer layer of the outer layer located in an inner surface side of the sleeve of the socket fitting.

12. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 8 wherein an inner diameter of a  
10 portion adjacent to the collar-like portion is smaller than the rest portion in the sleeve of the socket fitting after securely compressing or swaging the socket fitting.

13. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 10 wherein a projection raised  
15 radially inwardly is formed on an inner surface of the sleeve of the socket fitting and the projection bites in the reinforced layer by securely compressing or swaging the socket fitting.

14. A fastening structure assembled on an end portion of a hose with corrugated metal tube as set forth in Claim 8 wherein an inwardly directed  
20 annular projection is formed on an inner surface of the sleeve of the socket fitting on a position near the collar-like portion thereof to restrain the filler layer from deforming and escaping in a direction away from the collar-like portion thereof, when securely compressing or swaging the socket fitting.